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Business Week Board Rankings and Subsequent Stock Returns

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ABSTRACT

Recent corporate bankruptcies have placed renewed focus on the role of a firm's board of directors; therefore, I study rankings of the best and worst boards of directors as published by Business Week. Similar to prior studies examining survey data, I find that the portion of the rankings determined via investment manager survey is biased by the "halo effect." However, I also find that the rankings as a whole, and particularly the portion calculated via quantitative analysis, do provide information that can be used in a trading strategy capable of generating positive abnormal returns, thereby implying that board strength does matter.

INTRODUCTION

The fall of large firms such as Enron and WorldCom has led to renewed interest in the debate surrounding the importance of a firm's board of directors. In principle, the board exists to represent stockholder interests by reducing agency costs through oversight of management and dissemination of information to the investing public. However, recent accounting scandals, allegations of excessive compensation, apparent self-dealing, and outright business failures have highlighted the ineffectiveness of some boards, raising the question of whether a stronger board might have prevented, or at least constrained, certain ill-considered management actions.

Prior studies have examined the importance of certain individual board characteristics; however, I am unaware of a single measure of board quality that has been extensively studied or proven to be informative for predicting long-run return. To address this issue, I investigate stock price performance for portfolios of companies with the best and worst boards of directors as published by *Business Week*. These rankings are determined through a process integrating investment manager survey results and *Business Week*'s quantitative analysis of board characteristics.

Similar rankings, such as *Fortune*'s Most Admired Companies and *Institutional Investor's* Investment Manager All-Stars, have previously been studied, with authors concluding that these rankings are primarily determined by prior stock return, an outcome of the "halo effect," and are, therefore, not unbiased representations of the primary variables of interest. If this is the case for *Business Week* rankings, then using the rankings for the purpose of investment decisions may be inappropriate. However, if the bias is not present, or if it can be eliminated, then firms with the best

boards should outperform those with the worst boards, thereby providing information that can lead to profitable portfolio formation.

In testing the rankings, I find that the halo effect has an influence on the survey portion of the rankings; however, I also find that the rankings as a whole are informative in creating profitable trading strategies. Specifically, I find that an average positive quarterly abnormal return of 3.72 (4.78) percent can be earned in the three-year (five-year) period subsequent to the rankings being published. These returns are achieved by going long in the firms classified as having a best board of directors and by shorting the firms classified as having a worst board of directors.

As a further extension, I adjust the rankings by eliminating the portion of the rankings, i.e. the survey component, influenced by the halo effect. I find that this "re-ranking" increases the level and significance of the positive abnormal return. Given the results, I conclude that board strength does matter and that information on a firm's board of directors can be implemented into profitable trading strategies.

AGENCY COSTS, INTERNAL CONTROL, AND THE BOARD OF DIRECTORS

The seminal work by Jensen and Meckling (1976) provides the primary starting point for the majority of research focusing on internal control and agency costs. Jensen and Meckling (1976) identify agency costs as resulting from a separation of ownership and control; however, this separation would not create a conflict if all actions of the manager were known and controllable by the owners. Thus, the discussion of agency costs could also be one of making information accessible to current and potential owners. As such, Jensen and Meckling (1976) argue that agency costs could be reduced by advancements in auditing, formal control systems (i.e., a more effective board of directors), and security analyst following. In this analysis, I concentrate specifically on the effectiveness of the board of directors in reducing agency costs and increasing security returns.

The laws of the state in which a firm is incorporated typically specify the requirement for a firm to be managed by a board of at least three directors. Directors on these boards are intended to represent the interests of owners by improving internal control and reducing agency costs. They should provide advice and counsel to managers, act as discipline for potentially unlawful or unethical activity, and serve as crisis handlers, thereby strengthening internal control, reducing agency costs, and increasing return. Having recognized the potential benefits, investment managers such as TIAA-CREF and the California Public Employees' Retirement System are placing increased importance on a firm's board of directors, implying that stronger boards, i.e. stronger internal controls, do in fact lead to lower agency costs and improved stock performance.

In one of the first studies on boards of directors, Mace (1972) states that the generally accepted roles of boards have little relation to what they actually do in practice, primarily because directors are most often hand-selected by the president. Thus, the agency costs which boards were designed to reduce are potentially increased if an improper structure or focus is adopted. In fact,

Core, Holthausen and Larcker (1999) report that firms with weaker governance structures have greater agency problems, thereby leading to worse performance.

Recent empirical literature has attempted to identify the characteristics of boards that strengthen internal control and reduce agency costs by further aligning the interests of board members with shareholders, by enabling shareholders to elect a more effective board, or by increasing the amount of information provided to owners and the market as a whole. The most researched area seems to be the effect of independent, outside directors on the results of the firm. Beasley (1996) finds that fraudulent firms are more likely to have a larger proportion of insiders on the board, and Beasley and Petroni (2001) find that independent boards are more likely to hire an auditor with a greater degree of industry-specific experience, thereby reducing agency costs. Byrd and Hickman (1992) find that bid premiums for takeover attempts are higher for target firms that have a larger proportion of independent directors. Additionally, Cotter, Shivdasani, and Zenner (1997) find that when the target firm's board is independent, shareholders earn higher gains from tender offers.

Aside from member independence, other board characteristics also appear to influence internal control and performance. The amount of firm equity held by directors (Bhagat, Carey, & Elson, 1999) has been shown to be positively correlated to performance, which is consistent with the 1995 recommendation of the National Association of Corporate Directors to increase the use of equity-based compensation to better align the interests of shareholders with directors. Also, Vafeas (1999) and Xie, Davidson, and DaDalt (2003) find that board meeting frequency is related to performance, and Yermack (1996) illustrates that board size is also influential.

The results of these studies show that many characteristics of board structure are influential in determining the internal control structure, agency costs, and performance of a firm, as well as the associated return on its securities. Thus, a measure of overall board quality would be beneficial for conducting research in the areas of agency costs, internal control, and asymmetric information, and particularly for use as a criterion in making investment decisions. I describe a potential measure in the next section.

DATA DESCRIPTION

Rather than evaluating an overall quality indicator, previous studies of boards of directors have generally concentrated on a single board characteristic such as the number of independent directors, the number of meetings, or the level of ownership. I attempt to address this issue by using rankings published by *Business Week* magazine. *Business Week* first reported on the best and worst boards of directors on November 26, 1996, with subsequent rankings on December 8, 1997, and January 24, 2000. An updated report was released by *Business Week* on October 7, 2002; however, *Business Week* has changed the format and no longer gives numerical rankings. Additionally, the survey is now conducted among governance experts rather than investment managers.

Hayes and Lee (1999) study *Business Week*'s rankings for the 1997 survey; however, they only focus on returns nine months after publication and do not recognize or adjust for the potential halo effect. Also, the study of returns only reports simple t-statistics for the difference between market-adjusted return. Thus, my research adds additional surveys, incorporates past returns and potential biases, and looks at long-run return after adjusting for multiple factors.

For each report, *Business Week* surveyed the largest pension funds and money managers, who were asked to identify the best and worst boards of directors based on four categories: accountability to shareholders (*SurvAcct*), quality of directors (*SurvQu*), independence (*SurvInd*, and corporate performance (*SurvPerf*). The companies, approximately 210, identified by the survey respondents were then subjected to an analysis by *Business Week* focusing on the areas of accountability (*GuidAcct*), quality (*GuidQu*), and independence (*GuidInd*).

In *Business Week*'s quantitative analysis, the independence score is based on the number of outsiders on specific committees, particularly the audit and compensation committees, and the board as a whole. *Accountability* is based on directors' equity interest in the firm, number of meetings per year, and whether or not the board is elected every year. *Quality* is determined by the number of boards a director sits on and the experience level of the director in the firm's core business. The areas measured fall closely in line with the characteristics of a board that were found to be important in controlling agency costs and predicting performance. The overall score (maximum of 100 points) is based evenly on the survey score and the analysis score, each with a maximum of 50 points. Finally, the boards are ranked from best to worst, and the best and worst twenty-five are reported for each survey.

Data on prices and returns before and after the survey announcement are gathered from the CRSP database. To conduct abnormal long-run return analyses, I use the Fama and French (1992, 1996) model as extended by Carhart (1997). I obtain the relevant factor data from Ken French's website. Data on company specific items such as the number of shareholders and sales level come from *Compustat*, where data for the November 1996 and December 1997 rankings come from December of 1996 and 1997, respectively, and data for the January 2000 ranking come from December 1999.

COGNITIVE ERROR AND THE HALO EFFECT IN SURVEY DATA

Because the *Business Week* rankings are based, in part, on survey results, they may be influenced by the "halo effect." The term halo effect was first used by Thorndike (1920) and is described by Nisbett and Wilson (1977) as the "influence of a global evaluation on evaluations of individual attributes." This implies that firms with overall good reputations or past performance (the global evaluation) are also viewed as having good boards of directors (the individual attribute).

Nisbett and Wilson (1977) conduct further experiments and conclude that the evaluation of attributes are influenced by the halo effect even when there is sufficient information to allow for an

independent assessment of the specific characteristic. Thus, even if the individuals surveyed by *Business Week* could specifically evaluate boards of directors, it is possible that they are unduly influenced by other, more global characteristics, such as name recognition and past returns.

The halo effect is an example of the behavioral phenomenon known as "representativeness," which is a type of cognitive error. The seminal work in this area was conducted by Tversky and Kahneman (1974). They explain that people rely on a limited number of heuristic ("rule-of-thumb") principles that allow them to reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations.

Specifically, representativeness involves answering the question, "What is the probability that object A belongs to class B?" This question is particularly relevant to survey data where respondents are asked to judge whether a firm is in one group or another. Tversky and Kahneman (1974) find that individuals tend to diverge from rational reasoning by failing to properly consider base rate probabilities, which amounts to a violation of Bayes' Rule. Wood (1996) identifies the results of this error as a tendency to select companies with good pasts rather than good futures.

As an example, some researchers have relied on *Fortune* magazine's list of the most admired companies to proxy for reputation. However, analysis of this survey indicates that rankings are heavily determined by past financial performance and are not unbiased predictors of reputation or future performance (e.g., Black, Carnes, & Richardson, 2000; Fombrun & Shanley 1990; Shefrin & Statman, 1995). In fact, surveys with results that are predominately determined by past returns may actually rank firms in the direction opposite to what is expected relevant to future returns. As noted by Barberis, Shleifer, and Vishny (1998, p. 308), "securities with strings of good performance, however measured, receive extremely high valuations, and these valuations, on average, return to the mean."

In a similar fashion, the rankings of investment analysts have also been found to be influenced by cognitive error. Li (2002) finds that the investment manager all-stars published by *Institutional Investor* are based more on reputation and recognition than on actual performance. Additionally, even though performance is more important for a similar ranking in the *Wall Street Journal*, the criteria for being included in the evaluation effectively introduces a similar bias.

The existence of the halo effect suggests that using the *Business Week* rankings may be problematic. So, in the analyses that follow, I test for the importance of the halo effect, and I also evaluate stock price performance for the companies as ranked by *Business Week* and also for a re-ranked sample designed to exclude the portion of the *Business Week* ranking that is survey based.

DESCRIPTIVE STATISTICS

Panels A and B of Table 1 report descriptive statistics for all three surveys combined. The panels contain means and standard deviations for firms with the best boards and worst boards, as

well as a difference of means test between the groups. The variables in Panel A are firm specific measures obtained from financial statements and market prices. These items are defined as follows:

MV	= total equity market value (capitalization) in millions;
Shareholders	= total number of shareholders in thousands;
MVperHolder	= market value per shareholder in thousands;
EIS	= the absolute value of extraordinary income scaled by total sales;
CASHA	= balance sheet cash as a percentage of total assets;
Y-t	= cumulative market-adjusted buy-and-hold returns in percent calculated over the t years preceding the survey, t = 1, 3, 5; and
Y+t	= cumulative market-adjusted buy-and-hold returns in percent calculated over the t years following the survey, t = 1, 3, 5.

As shown in Panel A of Table 1, the companies rated as having the best boards have a significantly higher market value at the time of the survey, as well as a larger market value per shareholder, which is a proxy used by Merton (1987) to identify the influence of large, external shareholders. The larger market value per shareholder is consistent with Shleifer and Vishny (1997), who conclude that large shareholder blocks are necessary for effective corporate governance. However, the best boards tend to be firms that have higher cash on hand, which is in contrast to the prediction of Jensen (1986), who suggests that higher FCF leads to increased agency costs. In unreported results, I also test FCF scaled by assets and sales, but find this to be more related to past performance than the agency costs Jensen intends. Cash on the balance sheet is likely a better representation of management's overall inclination to retain cash rather than to pay out to owners. Extraordinary income is often thought to be associated with earnings management, which might be more common or more significant for firms with weaker boards. However, the two groups are not significantly different in terms of absolute extraordinary income reported.

Table 1: Descriptive Statistics

The following panels provide descriptive statistics for all three surveys combined. Additionally, t-statistics for a difference of means test assuming unequal variances are reported. The category Best reports values for the best boards of directors in *Business Week*'s survey (approximately 25 companies per survey), and Worst reports values for the worst boards of directors in *Business Week*'s survey (approximately 25 companies per survey). Panel A reports firm and market characteristics, and Panel B reports *Business Week* ranking scores. *MV* is market value in millions as of the date of survey. *Shareholders* is the total number of shareholders in thousands owning stock. *MVperHolder* is market value per shareholder in thousands. *EIS* is the absolute value of extraordinary income scaled by sales. *CASHA* is balance sheet cash scaled by assets. Overall is the total score from the *Business Week* survey and analysis; whereas, *Survey* and *Analysis* are the components from the industry survey and from *Business Week*'s guideline analysis, respectively. *SurvAcct, SurvQu, SurvInd* and *SurvPerf* are scores from the survey for board accountability, quality, independence, and company performance, respectively. *GuidAcct, GuidQu*, and *GuidInd* are analysis scores from

Table 1: Descriptive Statistics

Business Week for board accountability, quality, and independence, respectively. *Y-5, Y-3,* and *Y-1* are the market-adjusted returns in percent for the five years, three years and one year prior to the survey, respectively. *Y+1, Y+3,* and *Y+5* are the market-adjusted returns in percent for the one year, three years and five years after the survey, respectively. All returns are computed on a buy-and-hold basis. Data from *Compustat* are from December of the same year for the 1996 and 1997 surveys, and data for the 2000 survey are from December 1999.

Panel A: Firm and Market Characteristics

	Best		Worst		Difference	
	Mean	Std. Dev.	Mean	Std. Dev.	t-statistic	p-value
MV	92156.0	90410.0	12243.0	20697.0	6.83	.0001
Shareholders	223.4	308.2	251.6	632.7	-0.28	.7830
MVperHolder	2235.9	7089.4	268.4	426.8	2.21	.0304
EIS	.0001	.0007	.0005	.0024	-1.04	.2995
CASHA	.1377	.1524	.0917	.1324	1.68	.0958
Y-5	297.87	904.99	-142.0	91.73	3.71	.0001
Y-3	99.69	195.12	-84.4	61.82	6.84	.0001
Y-1	11.56	56.15	-29.4	39.71	4.42	.0001
Y+1	5.24	35.54	10.66	54.18	-0.60	.5500
Y+3	26.88	136.61	-24.8	121.79	1.63	.1086
Y+5	0.41	86.89	-33.40	91.15	1.53	.1325

Panel B: Business Week Ranking Scores

	Best		Worst		Difference	
	Mean	Std. Dev.	Mean	Std. Dev.	t-statistic	p-value
Overall	66.4	8.0	30.2	10.4	na	na
Survey	28.5	6.3	2.0	6.3	25.72	.0001
Analysis	37.9	6.7	28.3	9.3	7.23	.0001
SurvAcct	8.5	0.7	3.0	1.5	29.60	.0001
SurvQu	8.5	0.6	3.3	1.3	30.63	.0001
SurvInd	8.2	0.8	3.0	1.4	27.58	.0001
SurvPerf	8.5	0.8	2.9	1.4	29.40	.0001
GuidAcct	7.3	2.5	4.6	3.5	5.63	.0001
GuidQu	6.9	1.7	6.2	2.3	1.93	.0551
GuidInd	8.0	1.8	5.7	3.5	5.20	.0001

na = not applicable

The returns for the best boards are significantly higher prior to the survey, which could be a result of a better board, or it could be indicative of further behavioral factors influencing the survey results. If historical returns are the result of having a better board (i.e., the survey is unbiased), I would expect continued higher returns for the firms with the best boards after the survey. With the exception of one-year return, this is what I find. Subsequent returns in the three- and five-year periods following the survey are indeed larger for firms classified as having a best board; however, the difference is not as significant as the pre-survey period. If I eliminate the 2000 survey and conduct the test on one-year return (or if median values are used), the difference is also positive, with a t-statistic of 0.60. The 2000 survey contains a larger proportion of tech stocks in the best category. With the collapse of the internet "bubble," the results for one-year return are somewhat different than the prior surveys.

The items reported in Panel B represent results from the *Business Week* rankings. The first item is the overall score (*Overall*). By construction, the highest ranked firms have higher scores, so a statistical comparison is not meaningful. The next two items, *Survey* and *Analysis*, are the scores from the survey and analysis portions of the rankings. Not surprisingly, the best firms have a higher score on both measures, but the difference is much more pronounced, both numerically and statistically, in the survey portion than in the analysis portion, which can be seen by comparing the t-statistics of 25.72 and 7.23, respectively. This is also true for the individual components of the survey portion (*SurvAcct, SurvQu, SurvInd,* and *SurvPerf*) as compared to the individual analysis portions (*SurvAcct, SurvQu,* and *SurvInd)*. These results tend to foreshadow the effect of cognitive error in the rankings, particularly in the survey component.

TESTS AND RESULTS

Based on the empirical results related to other industry surveys, I test for the existence of the halo effect and further analyze the relation between rankings and past returns, as well as between survey and analysis scores. If the data are indeed biased by the halo effect, I would expect that past returns would be highly correlated to overall scores and that survey results would be significantly different from analysis results. Table 2 reports the correlations between historical measures of return (*Y-1, Y-3*, and *Y-5*) and the various components of the *Business Week* rankings. I find that historical return is much more correlated to survey portions than it is to analysis portions, indicating a degree of halo effect in the survey results.

To further identify if the survey portion is biased, I test the difference in accountability, quality, and independence scores between survey results and analysis results. Table 3 reports the t-statistics for a difference of means test between survey and analysis scores for both categories (i.e., the best and worst boards). The results show a general consistency for each individual survey and for the surveys as a whole. For the best boards of directors, the survey scores are significantly higher

than the analysis scores (positive t-statistic), with the opposite being true for the worst boards of directors (negative t-statistic). This indicates that survey respondents (investment analysts) tend to overestimate the abilities of the board of directors of recently high performing companies and to underestimate the abilities of boards of directors of recently poor performing companies.

Table 2: Correlations

The following table provides correlations between historical returns and survey and analysis scores. *Survey* and *Analysis* are the components from the industry survey and from *Business Week* guideline analysis, respectively. *SurvAcct, SurvQu, SurvInd* and *SurvPerf* are scores from the survey for board accountability, quality, independence, and company performance, respectively. *GuidAcct, GuidQu*, and *GuidInd* are analysis scores from *Business Week* for board accountability, quality, and independence, respectively. *Y-5, Y-3*, and *Y-1* are the market-adjusted buy-and-hold returns in percent for the five years, three years and one year prior to the survey, respectively.

Panel A: Historical Return v. Survey Scores

	Y-1	*Y-3*	*Y-5*
Survey	.3432	.4386	.2299
SurvAcct	.3452	.4746	.2716
SurvQu	.3640	.4759	.2692
SurvInd	.3311	.4173	.2564
SurvPerf	.4344	.5706	.3489

Panel B: Historical Return v. Analysis Scores

	Y-1	*Y-3*	*Y-5*
Analysis	.2037	.2919	.2560
GuidAcct	.1941	.3239	.2493
GuidQu	.0918	.1389	.1406
GuidInd	.1556	.1807	.1563

Table 3: Comparison of Survey and Analysis Scores

The following table provides a difference of means test between survey scores and analysis scores for *accountability, quality*, and *independence.* Specifications are given for each individual survey (1996, 1997 and 2000), as well as for all three surveys combined. A positive value indicates that the scores of the survey portion were higher than the scores from *Business Week*'s analytic review.

	Accountability	*Quality*	*Independence*
1996:			
Best	4.25*	5.82*	0.82
Worst	0.49	-5.59*	-2.86**
1997:			
Best	3.54*	4.48*	1.16
Worst	-2.89**	-3.44*	-7.38*
2000:			
Best	-0.96	4.16*	-0.22
Worst	-8.13*	-11.17*	-2.36**
Combined:			
Best	2.31**	4.44*	0.51
Worst	-2.10**	-5.49*	-3.58*

*, **, and *** indicate significance at the 1, 5, and 10 percent levels, respective

Thus, on a univariate basis it appears that historical returns are a highly influential variable in determining classification as a best or worst board, particularly for the survey portion. To further explore this issue, I conduct a logistic regression as follows:

$$Best = b_0 + b_1 MV + b_2 Shareholders + b_3 MVperHolder + b_4 EIS + b_5 CASHA + b_6 Y\text{-}5 + b_7 Y\text{-}3 + b_8 Y\text{-}1 + e_t$$

where, the dependent variable *Best* takes on a value of one if classified as a best board and a value of zero if classified as a worst board. In addition to market-adjusted historical returns (*Y-5, Y-3*, and *Y-1*), I add variables suspected to be influential. Past returns can be proxied by market value, *MV*, as firms with higher past returns see increases in the value of their securities. As the number of *Shareholders* increases, I expect board effectiveness to go down due to the free-rider problem. As market value per shareholder (*MVperHolder*) increases, I expect agency costs to fall and board

effectiveness to increase since relatively large external shareholders are thought to be beneficial (e.g., Merton, 1987; Shleifer & Vishny, 1997). The absolute value of extraordinary income per unit of sales (*EIS*) could potentially be a proxy for earnings mismanagement; therefore, I would expect a negative relation between *EIS* and ranking. Jensen (1986) identifies free cash flow as a proxy for agency costs. A higher free cash flow indicates less willingness to pay out cash to owners, thereby increasing agency costs. Thus, I expect a negative relation between *CASHA* and board ranking. If the halo effect is present, I would expect a positive relation between market-adjusted historical return, particularly three-year (*Y-3*) and five-year (*Y-5*), and board ranking.

Table 4 reports the results from the logistic regressions. With the exception of *CASHA,* the relations on the coefficients of the univariate (regressions (1) through (8)) logistic regressions are consistent with my expectations. Regression (9) reports the results when I include all variables. Only *MV* and *Y-5* are significant in increasing the probability that a firm's board of directors will be ranked as a best board. These results are again consistent with the halo effect, in that past performance is the most influential predictor of board ranking.

Table 4: Logistic Regression, Best v. Worst Classification.

This table presents logistic regression results for the classification of a board as either in the Best group or the Worst group. The dependent variable takes on a value of one if the company's board is in the Best group. *MV* is market value in millions as of the date of survey. *Shareholders* is the total number of shareholders in thousands owning stock. *MVperHolder* is market value per shareholder. *EIS* is the absolute value of extraordinary income scaled by total sales. *CASHA* is balance sheet cash scaled by total assets. *Y-5, Y-3*, and *Y-1* are the market-adjusted returns in percent for the five years, three years and one year prior to the survey, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	-1.1900*	.3830***	-.6030	.3250	.0410	.9230*	.7900*	.5290**	-.2770
MV	.0004*								.0001**
Shareholders		-.0001							-.0023
MVperHolder			.0020*						-.0009
EIS				-146.8					99.0800
CASHA					2.4440				-.9200
Y-5						1.7200*			.9680**
Y-3							2.5000*		1.0250
Y-1								2.7100*	-1.3780
n	111	109	108	112	109	108	108	108	101
Percent correct	90.3	27.1	81.6	12.1	63.6	91.7	90.9	75.4	95.4

*, **, and *** indicate significance at the 1, 5, and 10 percent levels, respectively.

At this point, most prior studies on survey data have concluded that survey results are biased by the halo effect and therefore unusable in the empirical and decision making processes. However, a possible endogeneity problem exists in this study in that the historically better returns for the best boards could be the result of better internal control and lower agency costs, rather than the rankings being a result of the historical return. To examine this issue, I analyze the difference in average quarterly returns in the period before the survey, the period after the survey, and for the periods combined. Table 5 presents the results of this analysis. As previously shown, return prior to the surveys being published is much higher for firms classified as having a best board of directors. However, I also find that after the survey, there is a general tendency for the firms having a best board to continue to earn more than firms having a worst board, although this difference is only significant at a low level.

Table 5: Difference in Returns

The following table presents the difference in quarterly average returns between the firms with the best and worst boards of directors. The table provides the results for the period (3-yr. or 5-yr.) prior to the survey, the period (3-yr. or 5-yr.) after the survey, and for the entire period (Y-3 to Y+3 and Y-5 to Y+5). The final row in each section gives the t-statistic for the difference test between the two groups.

	1996		1997		2000	
	3-Yr	5-Yr	3-Yr	5-Yr	3-Yr	5-Yr
Before:						
Best	3.15	1.55	4.11	3.11	4.38	3.86
Worst	-1.8	-.83	-1.57	-1.61	-1.77	-1.28
t-statistic	2.01	1.26	2.01	2.28	1.42	1.72
After:						
Best	1.14	1.54	1.53	1.09	-0.38	na
Worst	-2.53	-0.58	-4.57	-3.39	0.47	na
t-statistic	0.88	0.64	1.30	1.15	-0.17	na
Combined:						
Best	2.15	1.56	2.57	2.14	2.21	2.44
Worst	-1.85	-0.69	-3.32	-2.46	-0.76	-0.70
t-statistic	1.74	1.20	2.09	2.09	0.82	1.08

na=not available

To further examine this issue, I move past the univariate analyses and conduct a Fama-French (1992, 1996) / Carhart (1997) style long-run abnormal return analysis on each survey individually and on the surveys combined. The model used is as follows:

$$DIFF = b_0 + b_1 Market + b_2 SMB + b_3 HML + b_4 UMD + b_5 BEFORE + b_6 BMarket + b_7 BSMB + b_8 BHML + b_9 BUMD + e_t$$

where:	
DIFF	= the quarterly difference in return on the best portfolio less the worst portfolio;
Market	= the excess return (market return less the risk free rate) each quarter for the market;
SMB	= the quarterly return on small capitalization stocks less the quarterly return on large capitalization stocks;
HML	= the quarterly return on high book-to-market stocks less the quarterly return on low book-to-market stocks;
UMD	= the difference between the quarterly return on high return portfolios and low return portfolios, and it represents the momentum factor developed by Carhart (1997); and
BEFORE	= a dummy variable taking on a value of one if the quarter is before the date of article publication, zero if after.

Each of the factor portfolios (i.e., *Market, SMB, HML*, and *UMD*) are obtained from Ken French's website. To account for changes in relationships in the periods before and after the survey, I include interaction terms between *BEFORE* and each of the other variables, thereby giving *BMarket, BSMB, BHML*, and *BUMD*. After controlling for these relationships, the intercept (*alpha*) represents abnormal return in the period following the survey publication. A positive *alpha* indicates that the portfolio of firms with the best boards outperformed the portfolio of firms with the worst boards after the survey. Based on the results of Fama (1998), I choose to use value-weighted returns, which, additionally, are much more realistic of a trading strategy. (When equal-weighted returns are used, the results are even more significant than those reported.) Table 6 presents the results of this analysis.

The sign and level of *alpha* provides an answer to the question of whether the rankings are influenced more by the halo effect, actual information, or neither. If the halo effect is present, I would expect a negative and significant *alpha*, indicating reversion to the mean as identified by DeBondt and Thaler (1985) and Barberis, Shleifer, and Vishny (1998). If the rankings are "correct," then *alpha* would be positive and significant, indicating firms with a best board of directors continue to outperform those with a worst board of directors. If *alpha* is not significant, then neither factor dominates.

Table 6: Fama-French-Carhart Regressions of Long-Run Return

The following table presents the coefficients from a time series regression in the Fama-French-Carhart form. The dependent variable (*DIFF*) is the quarterly return to the best portfolio (best twenty-five) less the quarterly return on the worst portfolio (worst twenty-five). *Market* is the excess return (market return less the risk free rate) each quarter for the market. *SMB* is the quarterly return on small capitalization stocks less the quarterly return on large capitalization stocks. *HML* is the quarterly return on high book-to-market stocks less the quarterly return on low book-to-market stocks. *UMD* is the difference between the quarterly return on high return portfolios and low return portfolios. *Market return, SMB, HML*, and *UMD* values are obtained from Ken French's website. *BEFORE* is a dummy variable taking on a value of one if the quarter is before the date of article publication, zero if after. I include interaction terms between *BEFORE* and each of the other variables, thereby giving *BMarket, BSMB, BHML*, and *BUMD*. Portfolio returns are calculated using value-weighted returns. The regressions for 5-yr are performed using quarterly returns over a ten year period (five years prior to the survey and five years after, where available). The regressions for 3-yr are performed using quarterly returns over a six year period (three years prior to the survey and three years after, where available).

	1996		1997		2000		Combined	
	3-Yr	5-Yr	3-Yr	5-Yr	3-Yr	5-Yr	3-Yr	5-Yr
Alpha	8.65**	3.89***	4.11	6.22**	4.84	4.84	3.72***	4.78*
Market	-0.80***	-0.23	0.24	-0.10	-0.90	-0.90	-0.17	-0.24
SMB	-0.21	-0.68*	-0.38	-0.84*	0.03	0.03	-0.85*	-0.86*
HML	-0.90	-0.37	0.49	-0.46	-1.83***	-1.83	-0.43	-0.55**
UMD	-0.64	-0.18	0.27	-0.28	-0.45	-0.45	-0.12	-0.23
BEFORE	4.22	-0.47	9.71	0.32	-0.10	0.44	1.69	0.27
BMarket	1.21**	0.20	-0.80	0.12	0.81	0.69	0.07	0.10
BSMB	0.05	0.22	-1.20	0.10	-0.09	-0.12	0.53	0.46***
BHML	0.44	0.18	-2.58***	0.10	2.10	1.69***	0.09	0.13
BUMD	-0.46	-0.03	-2.45	-0.26	0.97	0.62	0.11	0.13

*, **, and *** indicate significance at the 1, 5, and 10 percent levels, respectively.
Note: for 2000, returns after the survey extends for only 2.75 years, i.e., through the third quarter of 2002.

Examining the results of Table 6, *alpha* is consistently large and positive. Additionally, *alpha* is statistically significant and economically large. As an example, the *alpha* of 3.89 for the five year period after the 1996 survey indicates that, at the time of publication, going long in firms classified as having a best board and short in those firms classified as having a worst board would have earned an investor an annual positive abnormal return of approximately 15.56 percent. For all surveys combined, the average quarterly (yearly) abnormal return in the three- year period following publication is 3.72 (14.88) percent and in the five-year period is 4.78 (19.12) percent. Therefore, *Business Week* rankings on board structure, even in the presence of potential cognitive bias, are informative and can be applied to profitable trading strategies.

To replicate a potentially realistic strategy, I also consider entering into the long-short portfolio on the date of the original publication, and then rebalancing this portfolio upon subsequent publications. In addition, this approach adjusts for the bias introduced by some firms being included in multiple surveys (i.e., overlapping time periods). Using monthly returns, I find that the positive abnormal return earned over the total five year period is 1.46 (17.52) percent per month (year), which is significant at the five percent level.

Examining the other coefficients in Table 6, there is no consistency in significance across the surveys. However, in interpreting those coefficients that are significant, since the dependent variable is a long-short portfolio of best minus worst, a negative coefficient indicates that firms with the best boards had a smaller (or more negative) relationship to the factor than did the firms with the worst boards. A negative and significant coefficient on *Market* indicates that the best boards were associated with firms having lower betas. A negative and significant coefficient on *SMB* indicates that the best boards were less related to the returns of a small-minus-big stock portfolio, i.e., the firms in the best category were more related to larger firms. Also, a negative and significant coefficient on *HML* indicates that the firms with the best boards were less related to portfolios of high book-to-market stocks, which could be indicative of the worst boards being associated with firms currently, or expected to be, in financial distress.

HALO EFFECT ADJUSTMENT

To this point, I have determined that the rankings of the best and worst boards are influenced by cognitive error, particularly the survey portion; however, I have also found that the rankings as a whole are informative. These results indicate that the analysis portion of the rankings is structured well enough so as to offset the halo effect bias. Thus, if I could "re-rank" the results purely on analysis scores, this should eliminate the halo effect and improve the trading strategy.

To eliminate the halo effect, I rank each survey strictly by the analysis portion of the score. I then identify the score that separates the best twenty-five boards from the worst twenty-five boards. With this score, I evaluate the original listing of best and worst boards. For the best boards, I retain all firms with analysis scores above the critical level, and for worst boards I retain all firms with scores below this level. This creates a sample that is more representative of the best and worst boards of directors as based on pure analytic criteria. Because *Business Week* does not make available the entire listing, I cannot re-rank the entire sample. If I were to re-rank only the fifty boards listed in each survey and then treat the new set as the best and worst twenty-five, this would not be a true representation of the best and worst boards as determined by analysis scores. Thus, my method is biased against finding greater abnormal returns.

With the modified rankings, I repeat the Fama-French-Carhart regression from Table 6. If my intuition is correct in that the halo effect is concentrated in the survey portion of the ranking, the re-ranked sample should create *alphas* that are more positive and significant than the previous

results indicate. Examining Table 7, I find this to be the case, particularly for the 1996 and 1997 survey results. As a comparison, consider again the five-year period subsequent to the 1996 survey. Implementing the proposed trading strategy would produce a positive quarterly abnormal return of 5.82 percent, which is approximately 23.28 percent on an annualized basis. For the surveys combined, the three-year (five-year) quarterly abnormal return is 5.44 (5.18) percent, both of which are statistically as significant as the original sample, but higher in economic significance. Thus, it appears that correcting the rankings for the halo effect improves the performance and significance of the results.

Table 7: Fama-French-Carhart Regressions of Long-Run Return on Re-ranked Data

The following table presents the coefficients from a time series regression in the Fama-French-Carhart form. Data has been re-ranked on the basis of analysis scores only. The dependent variable (*DIFF*) is the quarterly return to the best portfolio (best twenty-five) less the quarterly return on the worst portfolio (worst twenty-five). *Market* is the excess return (market return less the risk free rate) each quarter for the market. *SMB* is the quarterly return on small capitalization stocks less the quarterly return on large capitalization stocks. *HML* is the quarterly return on high book to market stocks less the quarterly return on low book to market stocks. *UMD* is the difference between the quarterly return on high return portfolios and low return portfolios. *Market return, SMB, HML*, and *UMD* values are obtained from Ken French's website. *BEFORE* is a dummy variable taking on a value of one if the quarter is before the date of article publication, zero if after. I include interaction terms between *BEFORE* and each of the other variables, thereby giving *BMarket, BSMB, BHML,* and *BUMD*. Portfolio returns are calculated using value-weighted returns. The regressions for 5-yr are performed using quarterly returns over a ten year period (five years prior to the survey and five years after, where available). The regressions for 3-yr are performed using quarterly returns over a six year period (three years prior to the survey and three years after, where available).

	1996		1997		2000		Combined	
	3-Yr	5-Yr	3-Yr	5-Yr	3-Yr	5-Yr	3-Yr	5-Yr
Alpha	13.50*	5.82**	6.34***	5.62**	1.89	1.89	5.44***	5.18*
Market	-1.22**	-0.30	-0.02	-0.23	-1.45	-1.45	-0.44	-0.37
SMB	-0.14	-0.61*	-0.19	-0.94*	1.29	1.29	-0.83*	-0.84*
HML	-1.29**	-0.52	0.59	-0.32	-2.43***	-2.43	-0.58	-0.57***
UMD	-1.06***	-0.35	0.21	-0.14	-0.51	-0.51	-0.27	-0.24
BEFORE	-9.69***	-2.20	4.68	2.37	9.49	8.67	1.90	1.63
BMarket	1.87*	0.30	-0.62	0.06	1.14	1.12	0.32	0.25
BSMB	0.26	0.03	-1.12	0.06	-1.77	-1.79	0.25	0.23
BHML	1.64	0.23	-1.88	-0.15	1.43	1.38	-0.18	-0.12
BUMD	0.26	0.15	-1.14	-0.72	-0.09	-0.09	-0.12	-0.09

*, **, and *** indicate significance at the 1, 5, and 10 percent levels, respectively.
Note: for 2000, returns after the survey extends for only 2.75 years, i.e., through the third quarter of 2002.

CONCLUSION

Within the past few years, the role of a firm's board of directors has come under increased scrutiny, as investors have begun to reevaluate the importance of these entities in reducing agency costs, preventing corporate scandal, and increasing equity return. With this focus in mind, I have analyzed practitioner rankings of firms considered to have either a best or worst board of directors.

Consistent with previous literature examining survey data, I find that *Business Week*'s rankings are influenced by the halo effect; however, I also find that the rankings as a whole are informative and can be used to create a positive return trading strategy. Additionally, I determine that by eliminating the portion of the rankings (i.e., the survey component) that is affected by cognitive bias, I can improve the level and significance of the positive abnormal return. Given these results, it appears that board quality matters and that *Business Week* survey results are informative of this quality.

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